Typical Dissipation Factor Curves for Polar and Non-polar Insulating Materials

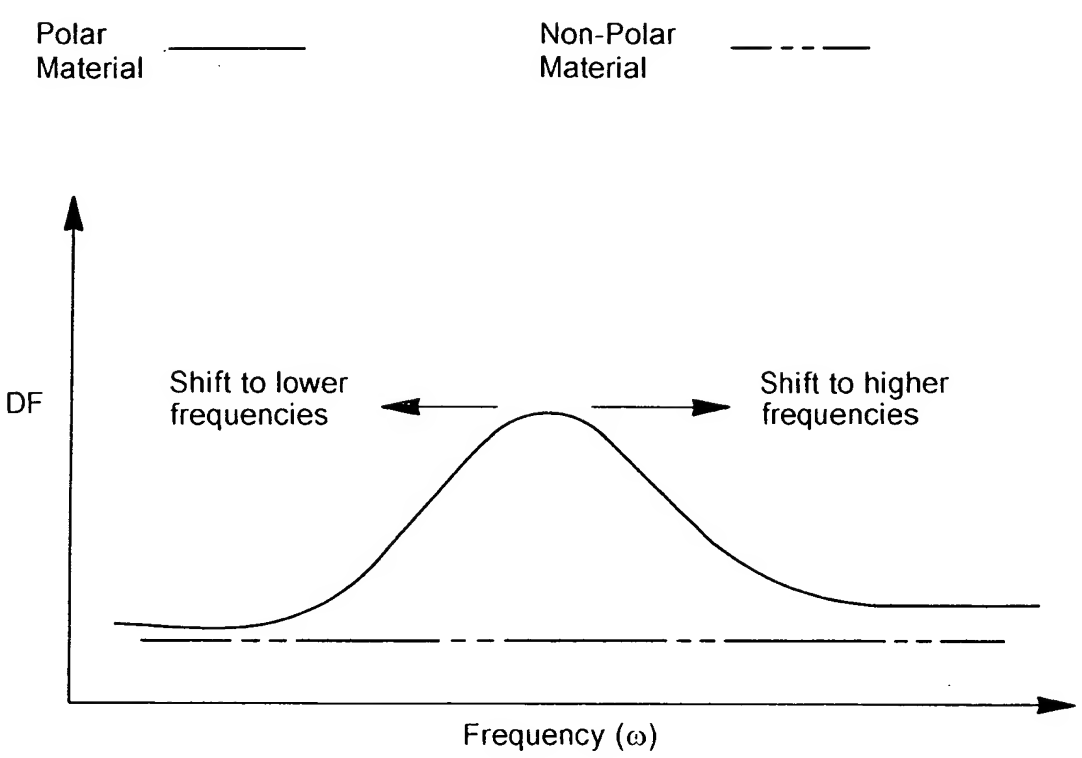

FIG. 1

Schematic Block Diagram

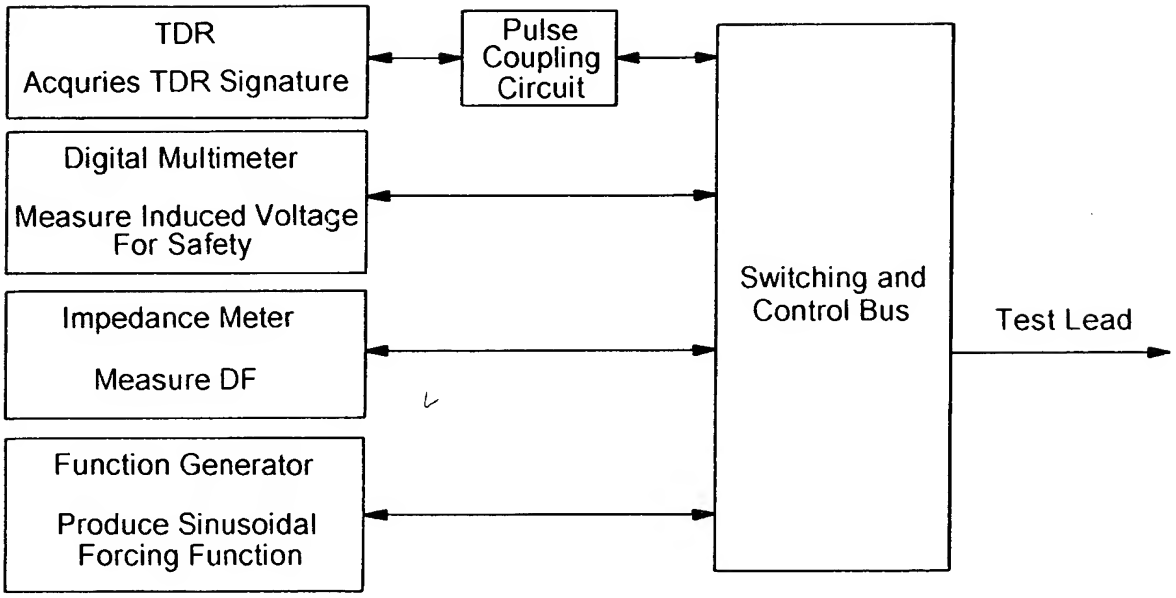

FIG. 2

Example TDR Signatures: Voltage versus distance along a wire under test

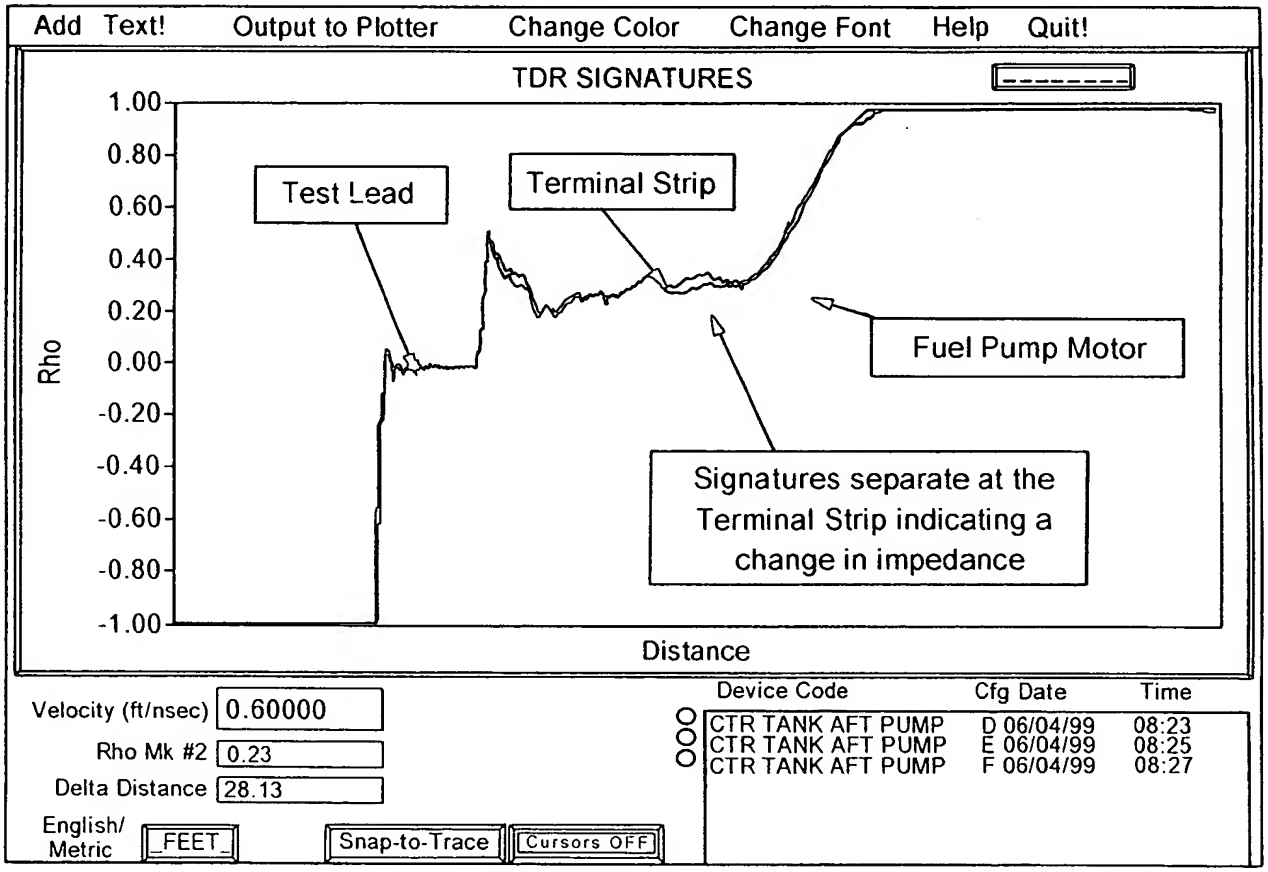

FIG. 3

4 TDR Signatures
(1 Excitied Wire and 3 Unexcited Wires) Showing "Fantail" Pattern

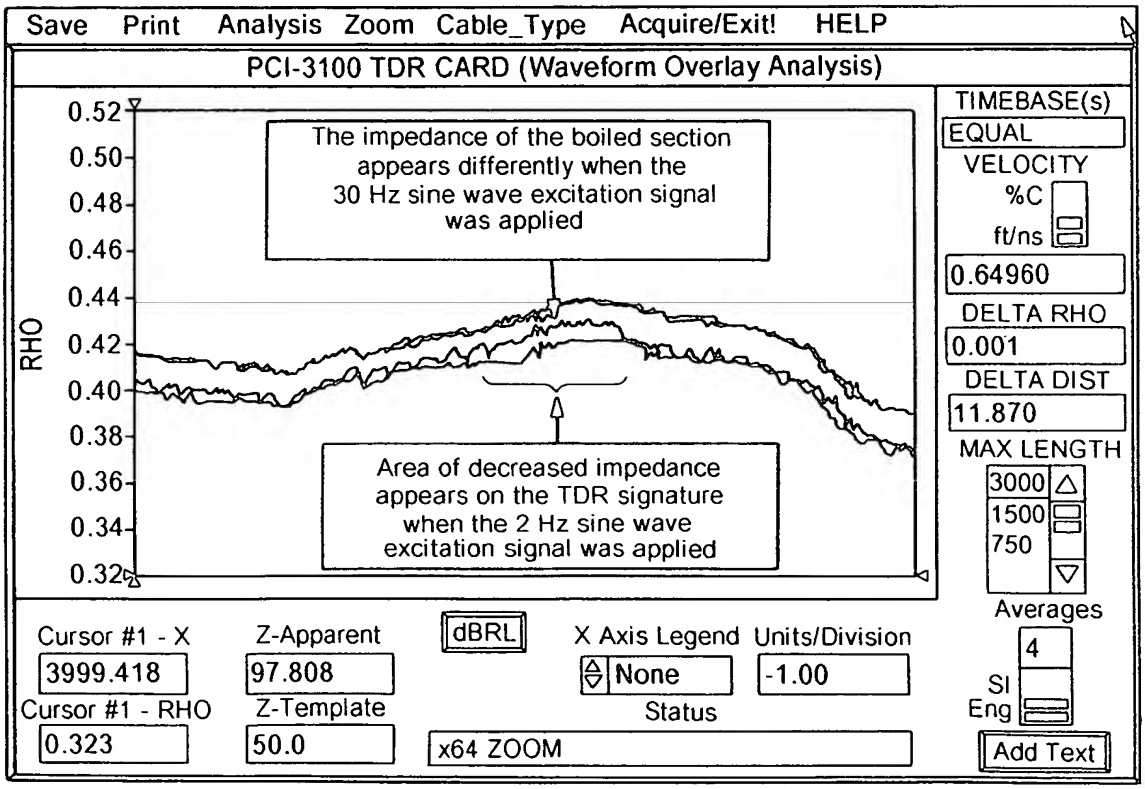

FIG. 4A

4 TDR Signatures
(1 Excitied Wire and 3 Unexcited Wires) Showing "Fantail" Pattern

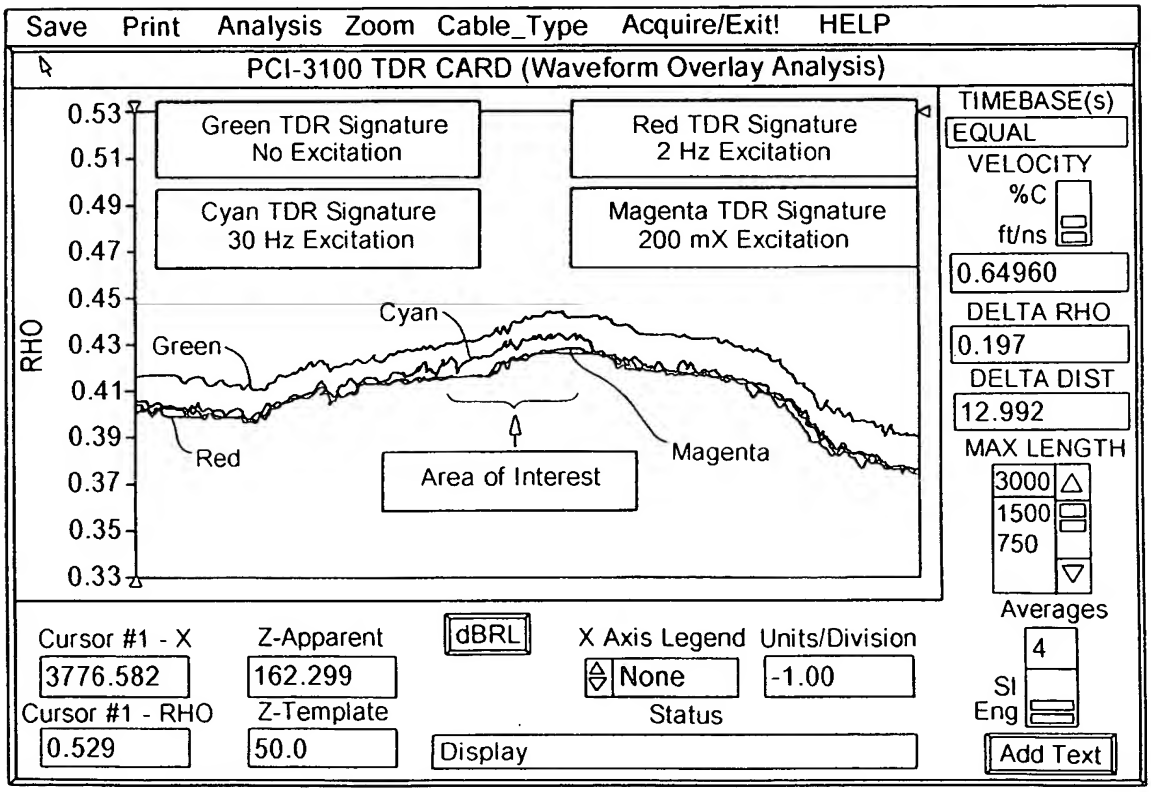

FIG. 4B

4 TDR Signatures
(1 Excitied Wire and 3 Unexcited Wires) Showing "Fantail" Pattern

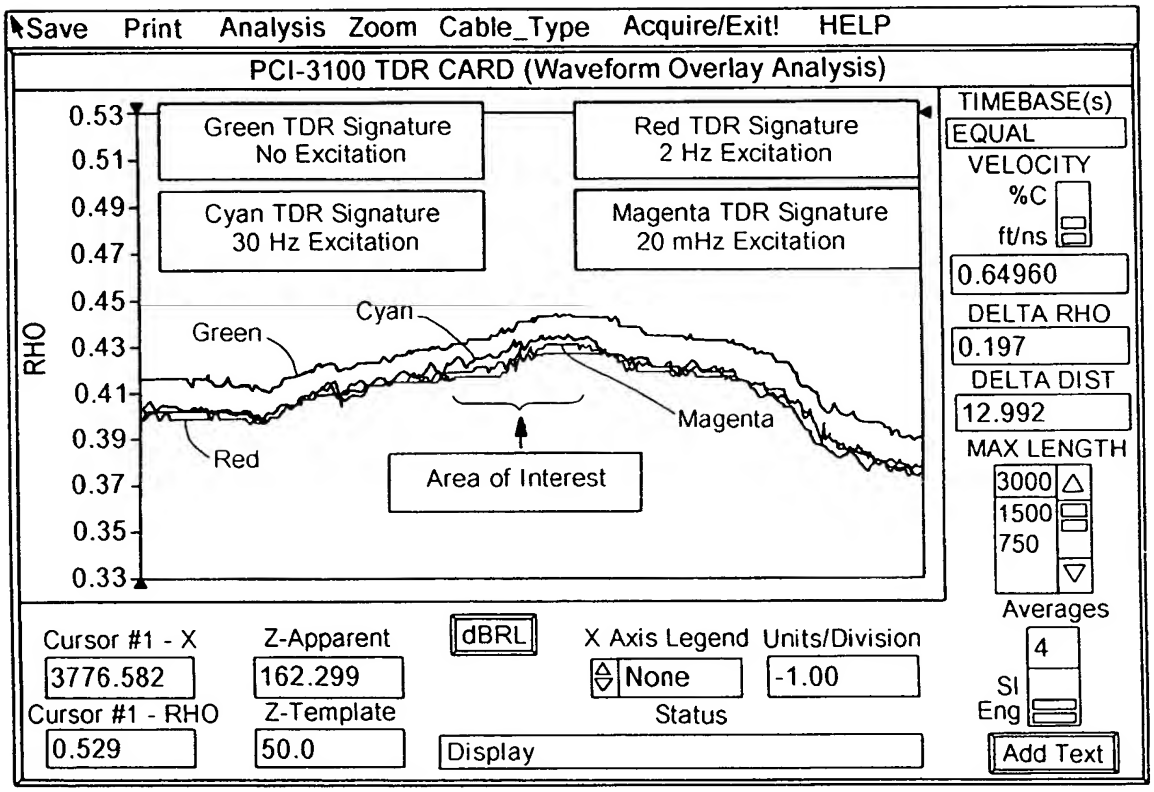

FIG. 4C

2 TDR Signatures
(1 Excitied Wire, 1 Unexcited Wire) Detecting a Defect

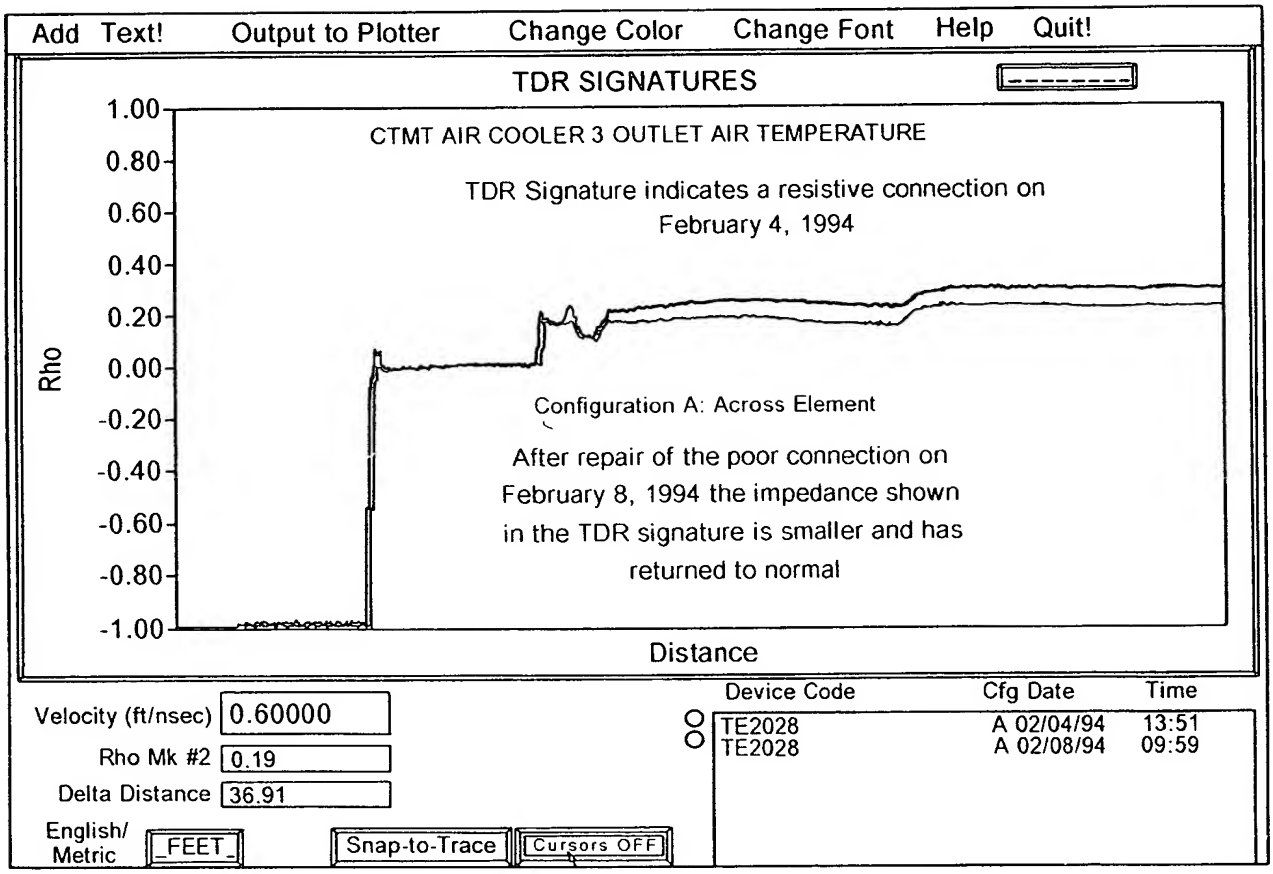

FIG. 5

TDR Signature from an Open Circuited Wire.

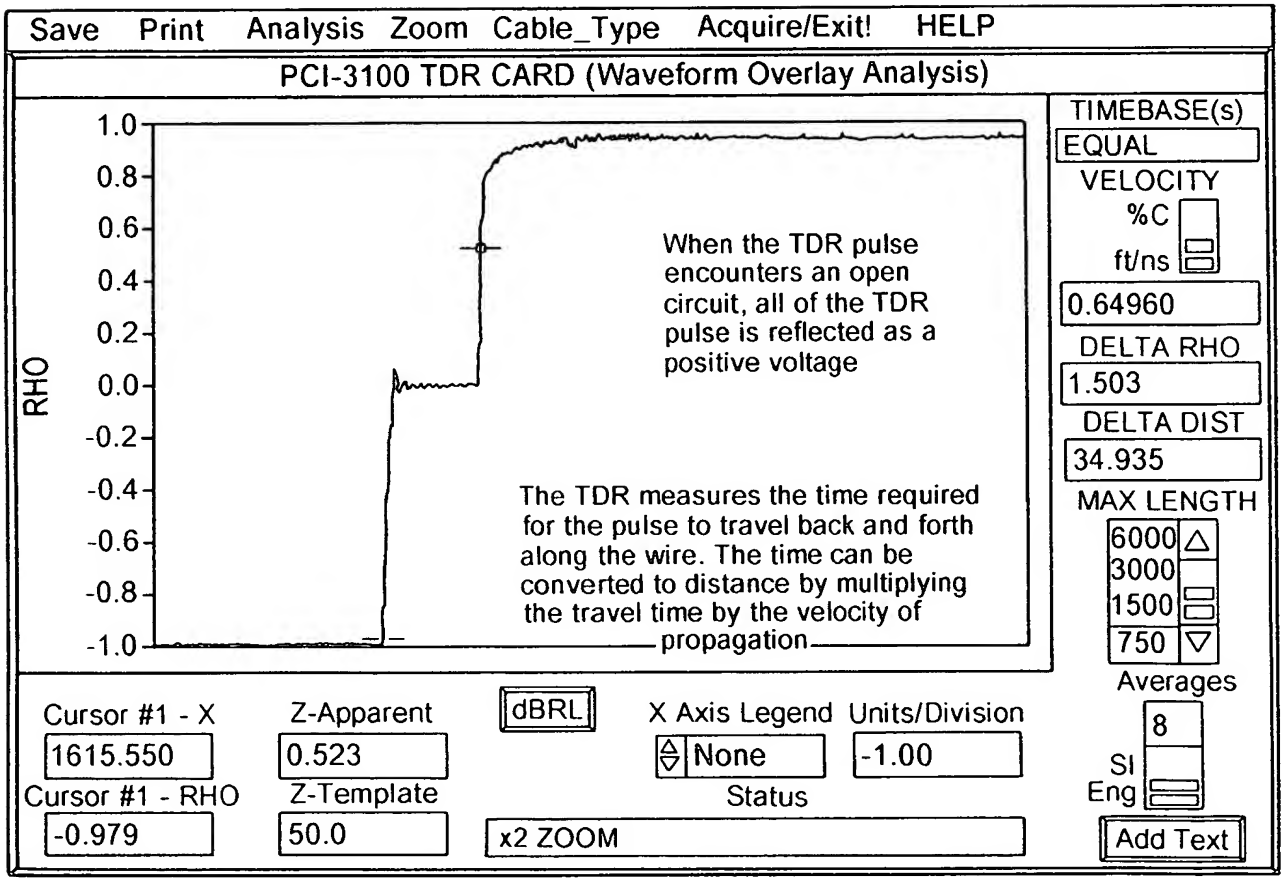

FIG. 6

TDR Signature from a Short Circuited Wire.

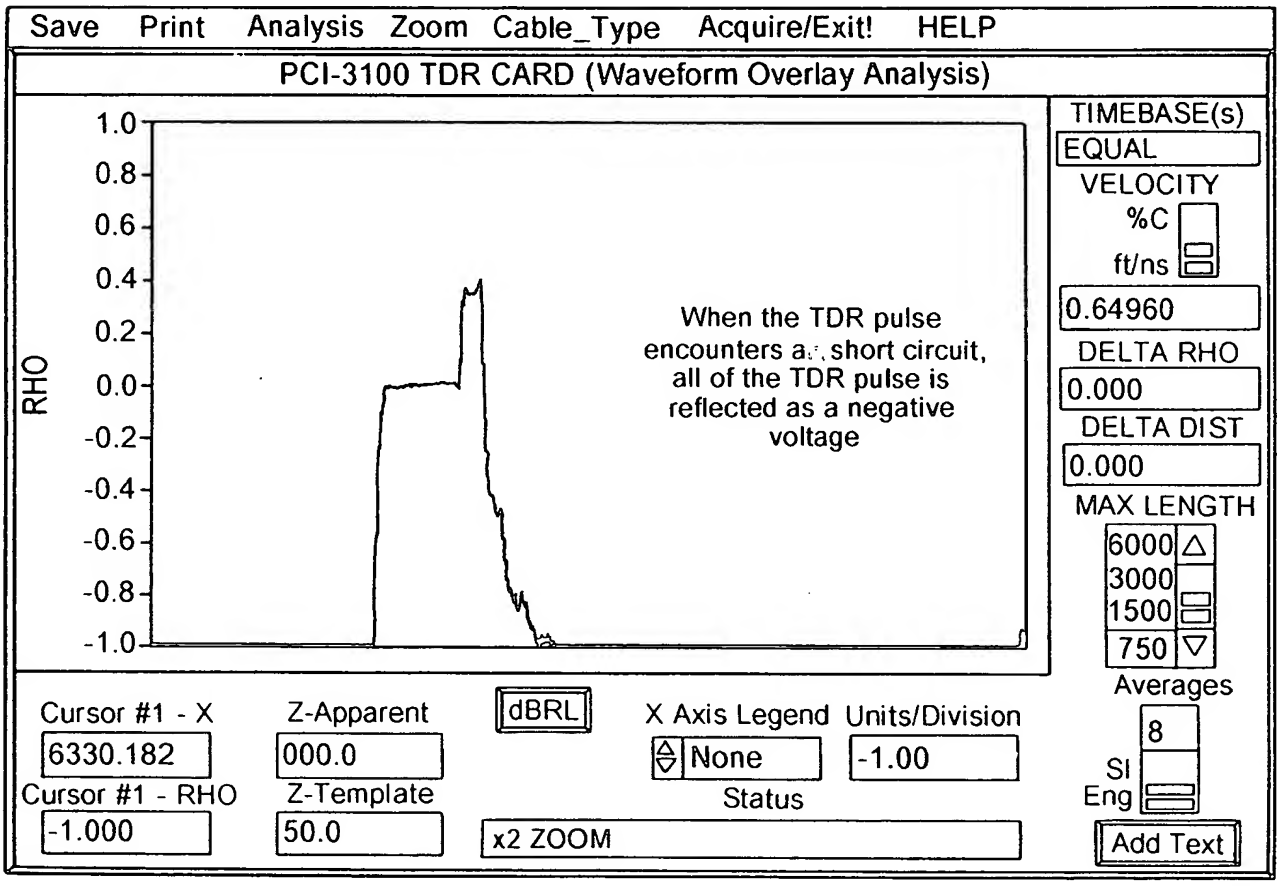

FIG. 7

2 TDR Signatures
(1 Excited Wire, 1 Unexcited Wire) Detecting a Fault in a Device

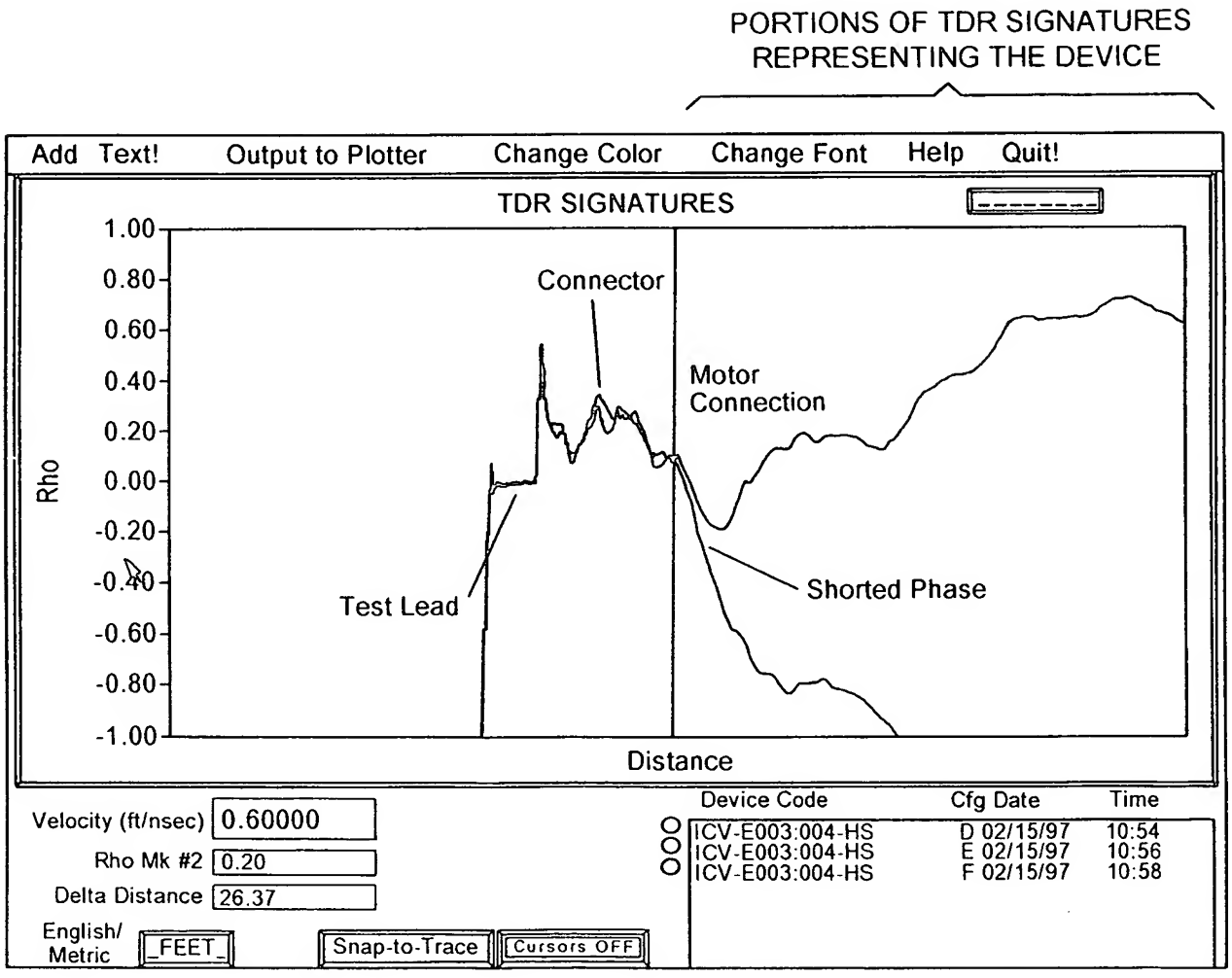

FIG. 8

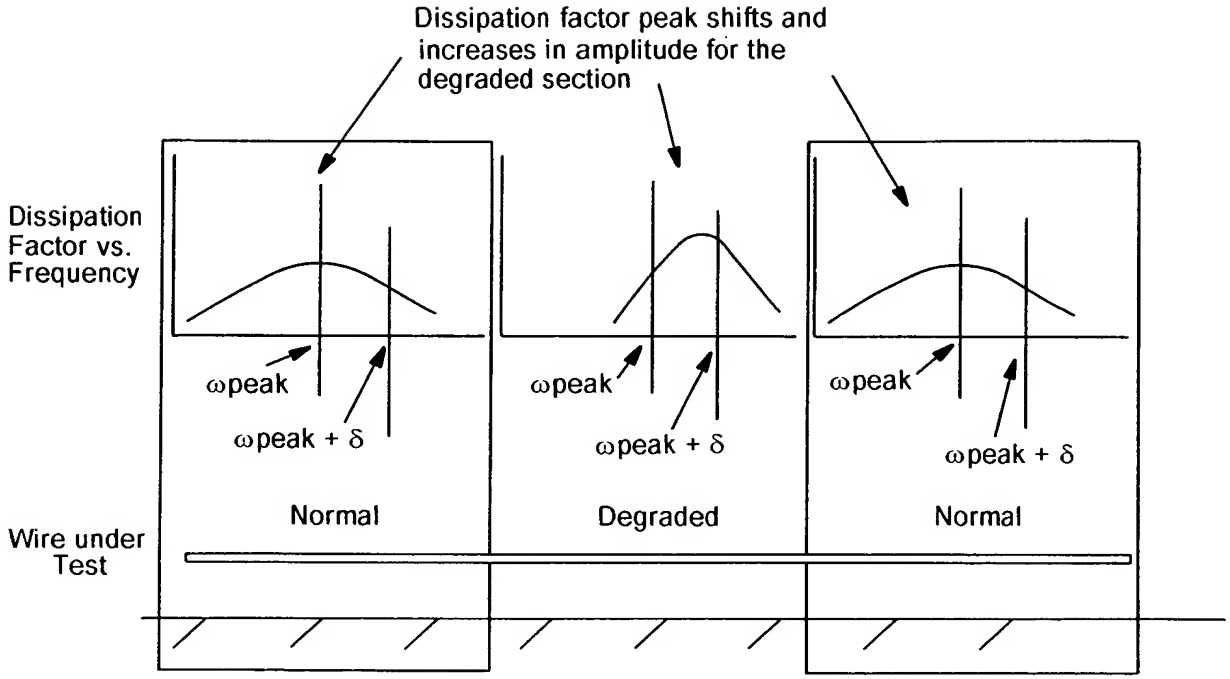
Dissipation factor peak shifts and increases in amplitude for the degraded section
Dissipation Factor vs. Frequency
ωpeak
ωpeak + δ
ωpeak
ωpeak + δ
ωpeak
ωpeak + δ
Normal
Degraded
Normal
Wire under Test

FIG. 9A

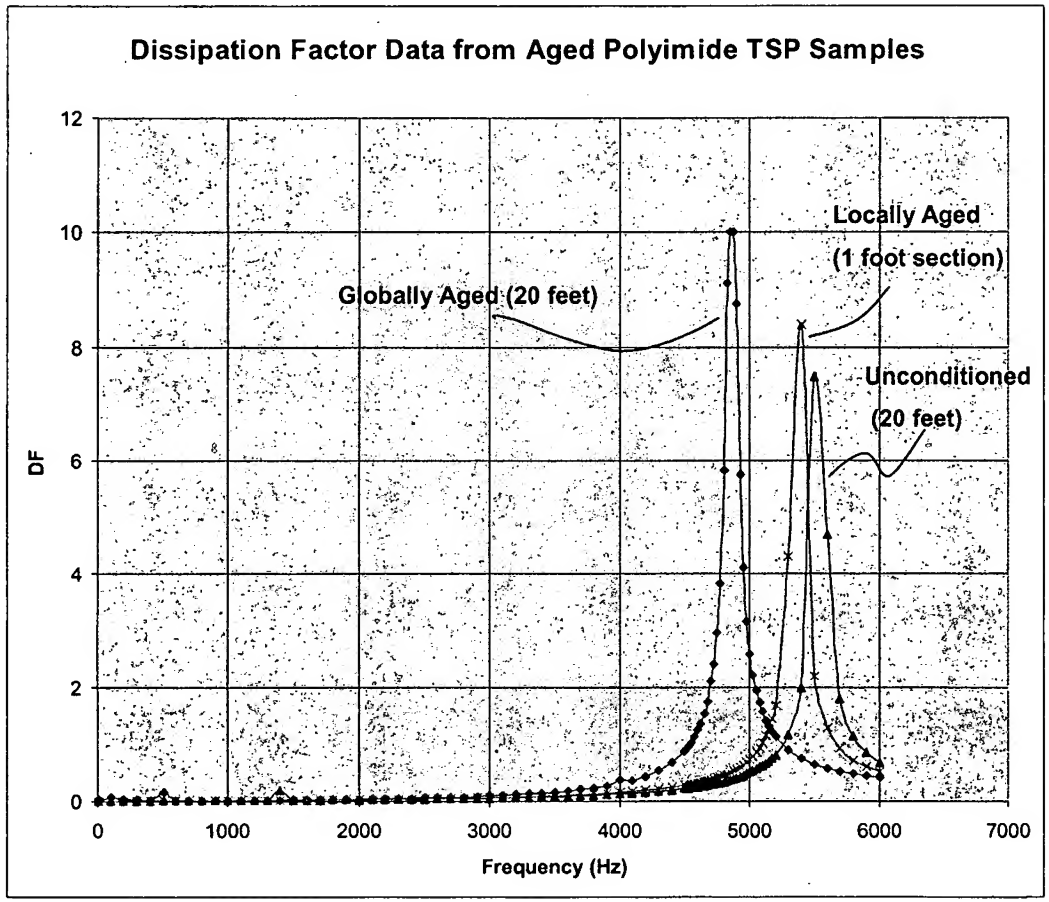
Dissipation Factor Data from Aged Polyimide TSP Samples
DF
Frequency (Hz)
0
2
4
6
8
10
12
0
1000
2000
3000
4000
5000
6000
7000
Globally Aged (20 feet)
Locally Aged
(1 foot section)
Unconditioned
(20 feet)

FIG. 9B

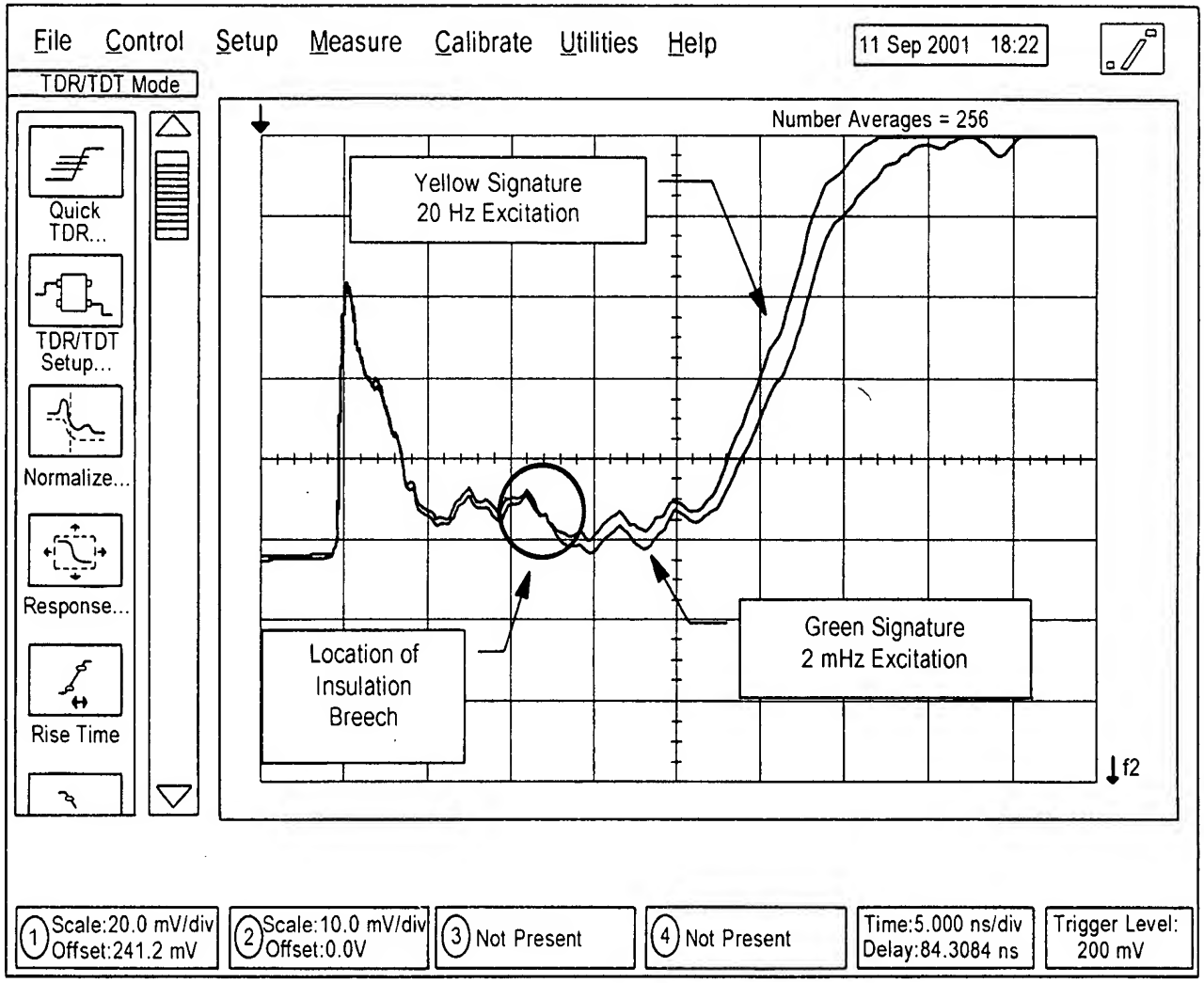
File
Control
Setup
Measure
Calibrate
Utilities
Help
11 Sep 2001 18:22
TDR/TDT Mode
Quick TDR...
TDR/TDT Setup...
Normalize...
Response...
Rise Time
Number Averages = 256
Yellow Signature
20 Hz Excitation
Green Signature
2 mHz Excitation
Location of Insulation Breech
f2
1 Scale:20.0 mV/div Offset:241.2 mV
2 Scale:10.0 mV/div Offset:0.0V
3 Not Present
4 Not Present
Time:5.000 ns/div Delay:84.3084 ns
Trigger Level: 200 mV

FIG. 10

RG-302 Cable Sample with Bias Tee

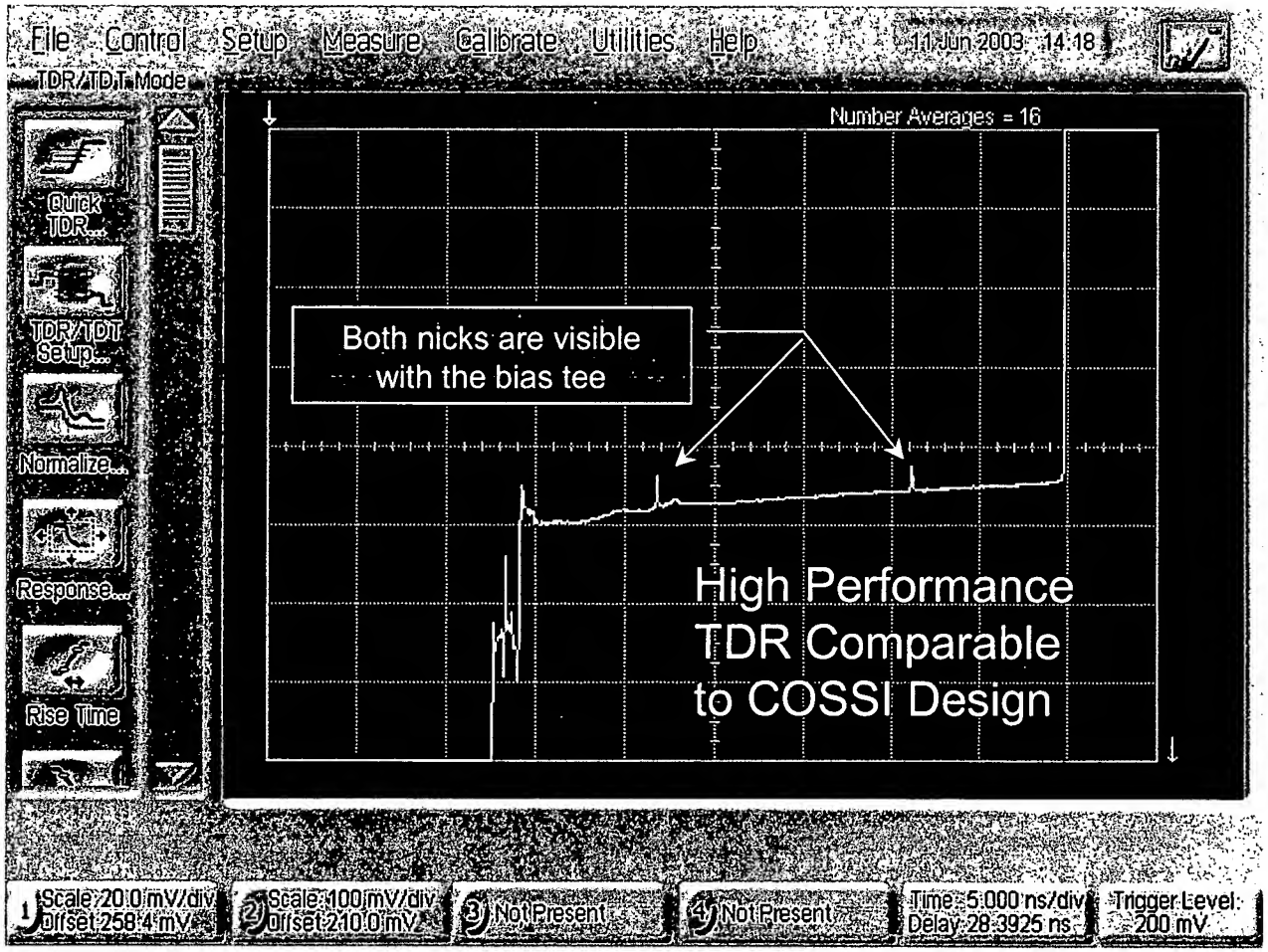

FIG. 11

EDT Applied to the RG-302 Cable Sample

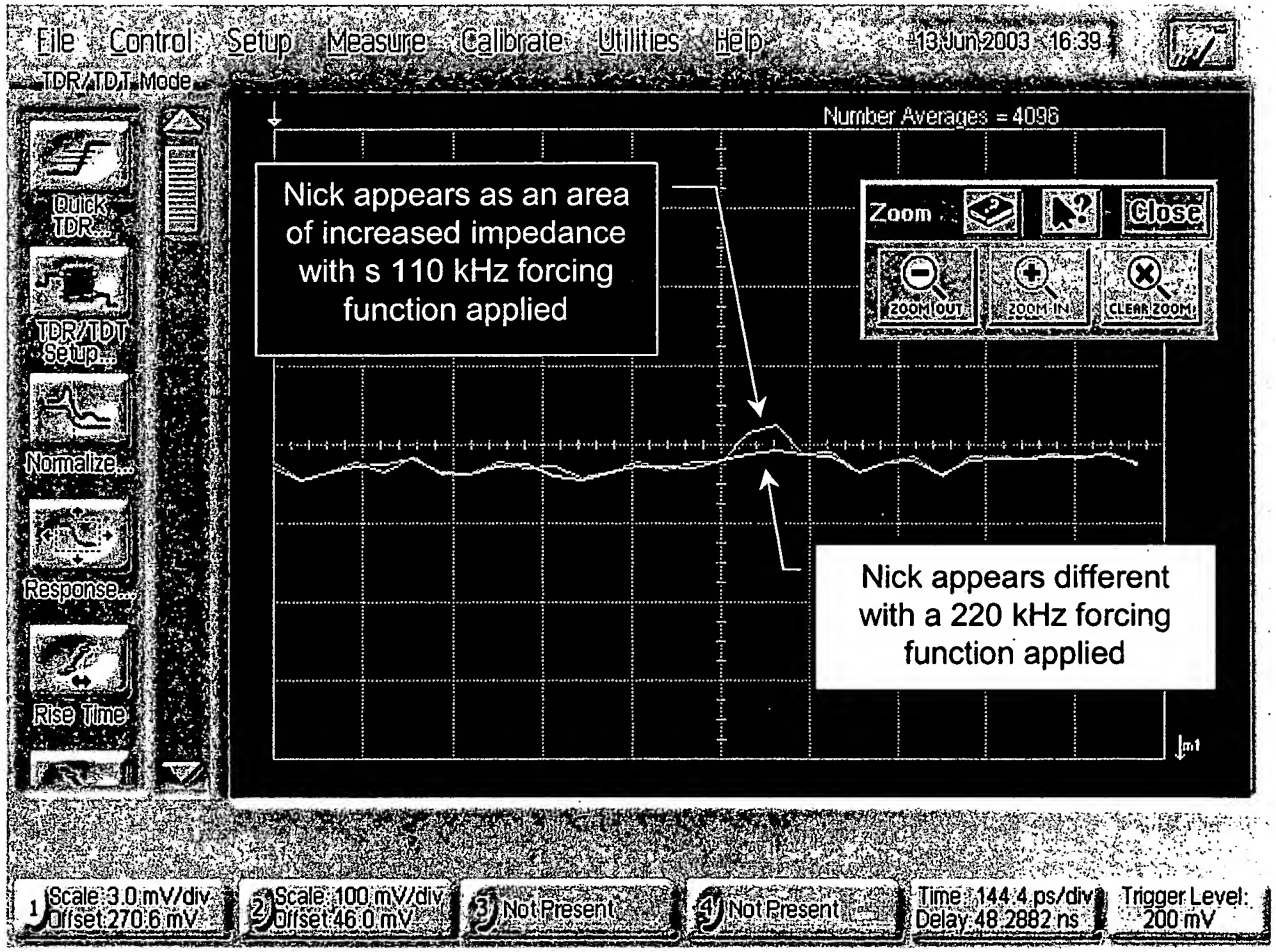

FIG. 12